Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL QUALITY MEASURES CLEARINGHOUSE

General

Title

Emergency department: percentage of patients who had the ETT confirmation performed.

Source(s)

Cleveland Clinic. Endotracheal tube placement confirmation metric. [internet]. Cleveland (OH): Cleveland Clinic; 2013 [accessed 2013 Jul 16]. [2 p].

Cleveland Clinic. National Quality Forum (NQF) measure submission and evaluation worksheet 5.0: Confirmation of endotracheal tube placement. 25 p.

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the percentage of emergency department (ED) patients with an endotracheal tube (ETT) placed or assessed with an endotracheal already in place who had the ETT confirmation performed.

Rationale

Securing and maintaining an airway by endotracheal intubation followed by confirmation of correct tube placement are some of the most critical actions an emergency physician performs. The only way to reliably ensure that correct endotracheal tube (ET) placement has been verified is through appropriate documentation in the medical record. The routine assessment of ET placement is presumed to occur when a patient is intubated in the emergency department (ED), arrives in the ED already intubated, or

experiences a sudden deterioration in clinical status. Whether this process is actually documented and how it is documented reveals much about increasingly complex but vital medical records.

A key component of emergency airway management is the ability to immediately recognize that an ET has been malpositioned. The tube may have become dislodged or placed in the esophagus or a main stem bronchus. The results of misplacement may be ineffective oxygenation and inadequate or no ventilation, resulting in acute and potentially catastrophic clinical deterioration, including death. Published prehospital misplacement rates range from 4% to 26%. The ED should approach a zero-risk environment for airway management, including secondary confirmation of ET placement and, importantly, documentation of this confirmation.

Many patients arrive in the ED already intubated at a transferring facility or by emergency medical services (EMS) personnel who have various levels of training and competence. It is noteworthy that a large statewide database found that two thirds of paramedics had performed 2 or fewer intubations over a 1-year period and that 39% had attempted none. On arrival at the ED, the critical process of primary assessment includes the ABCs: airway, breathing, and circulation. This primary assessment includes evaluation of ET placement. Secondary confirmation should occur even for stable patients and should be documented in the medical record.

The American College of Emergency Physicians (ACEP) defines criteria for confirmation of a secure airway. Because no method is 100% reliable and effectiveness varies based on circumstance, ACEP recommends 1 of 3 methods for confirmation: end-tidal CO_2 ($ETCO_2$) detection, direct laryngoscopy (DL), or an esophageal detection device. The American Heart Association has stated that, although there may be inadequate data to identify the optimal method for confirming ET placement during cardiac arrest, routine confirmation of correct placement is paramount. Exhaled CO_2 detectors, whether waveform, colorimetric, or digital, should be used and the results recorded. Relook with DL or use of an esophageal detection device is worthy of consideration as well, especially if $ETCO_2$ is not detected. In any case, confirmation of ET placement is integral to airway management.

Evidence for Rationale

Advanced life support. In: 2005 International Consensus Conference on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Circulation. 2005 Nov 29;112(22 Suppl):III25-54. [601 references]

Gausche M, Lewis RJ, Stratton SJ, Haynes BE, Gunter CS, Goodrich SM, Poore PD, McCollough MD, Henderson DP, Pratt FD, Seidel JS. Effect of out-of-hospital pediatric endotracheal intubation on survival and neurological outcome: a controlled clinical trial. JAMA. 2000 Feb 9;283(6):783-90. PubMed

Krisanda TJ, Eitel DR, Hess D, Ormanoski R, Bernini R, Sabulsky N. An analysis of invasive airway management in a suburban emergency medical services system. Prehosp Disaster Med. 1992 Apr-Jun;7(2):121-6. PubMed

Phelan MP, Glauser J, Wickline D, Schrump S, Gaber-Patel K, Joyce M. How well do emergency physicians document confirmation of endotracheal tube placement. Am J Med Qual. 2011 Jul-Aug;26(4):300-7. PubMed

Practice resource: verification of endotracheal tube placement. [internet]. Dallas (TX): American College of Emergency Physicians; [accessed 2010 May 29].

Wang HE, Kupas DF, Hostler D, Cooney R, Yealy DM, Lave JR. Procedural experience with out-of-hospital endotracheal intubation. Crit Care Med. 2005 Aug;33(8):1718-21. PubMed

Primary Health Components

Emergency department (ED); confirmation of endotracheal tube (ETT) placement; patient safety

Denominator Description

Total number of patients identified with an endotracheal tube cared for in the emergency department (ED) (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Number of emergency department (ED) patients with an endotracheal tube (ETT) placed or assessed with an endotracheal already in place who had the ETT confirmation performed (see the related "Numerator Inclusions/Exclusions field")

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

Unspecified

Extent of Measure Testing

Unspecified

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Emergency Department

Emergency Medical Services

Hospital Inpatient

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

Statement of Acceptable Minimum Sample Size

Unspecified

Target Population Age

All ages

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Making Care Safer
Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Safety

Data Collection for the Measure

Case Finding Period

Unspecified

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Encounter

Therapeutic Intervention

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions

Total number of patients identified with an endotracheal tube (ETT) cared for in the emergency department (ED)

Note: This population includes those patients who had an ETT placed in the ED and those patients who arrived to the ED with an ETT already in place.

Exclusions

None

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions

Number of emergency department (ED) patients with an endotracheal tube (ETT) placed or assessed with an endotracheal already in place who had the ETT confirmation performed

Note: Confirmation of endotracheal tube placement should always be performed on every ED patient with an endotracheal tube according to the specifications of the American College of Emergency Physicians (ACEP) clinical practice guidelines for secondary confirmation of ET intubations. The performance of this confirmation should be documented in the medical record including physician, nursing or respiratory therapy notes. Confirmation can be performed by qualitative and quantitative end-tidal carbon dioxide detection, repeat direct laryngoscopy or esophageal detector device.

Exclusions

Unspecified

Numerator Search Strategy

Encounter

Data Source

Administrative clinical data

Electronic health/medical record

Paper medical record

Registry data

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

The Cleveland Clinic Department of Emergency Medicine Intubation Audit Form

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a higher score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Prescriptive Standard

The goal performance is 100%. Because of the very nature of this critical patient safety metric, there should be 100% documentation of secondary confirmation of endotracheal tube placement.

Evidence for Prescriptive Standard

Cleveland Clinic. National Quality Forum (NQF) measure submission and evaluation worksheet 5.0: Confirmation of endotracheal tube placement. 25 p.

Identifying Information

Original Title

Confirmation of endotracheal tube placement.

Submitter

Phelan, Michael, MD - Independent Author(s)

Developer

Phelan, Michael, MD - Independent Author(s)

Funding Source(s)

Unspecified

Composition of the Group that Developed the Measure

Phelan, Michael, MD

Financial Disclosures/Other Potential Conflicts of Interest

None

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2011 Sep

Measure Maintenance

Unspecified

Date of Next Anticipated Revision

Unspecified

Measure Status

This is the current release of the measure.

The measure developer reaffirmed the currency of this measure in October 2015.

Measure Availability

Source available from the Cleveland Clinic Web site .

For more information, contact Michael Phelan, MD, at Cleveland Clinic, 9500 Euclid Avenue, Mail Code E-19, Cleveland, Ohio, 44195; Phone: 216-445-4545; E-mail: phelanm@ccf.org.

NQMC Status

This NQMC summary was completed by ECRI Institute on July 22, 2013. The information was verified by the measure developer on September 10, 2013.

The information was reaffirmed by the measure developer on October 2, 2015.

Copyright Statement

Production

Source(s)

Cleveland Clinic. Endotracheal tube placement confirmation metric. [internet]. Cleveland (OH): Cleveland Clinic; 2013 [accessed 2013 Jul 16]. [2 p].

Cleveland Clinic. National Quality Forum (NQF) measure submission and evaluation worksheet 5.0: Confirmation of endotracheal tube placement. 25 p.

Disclaimer

NQMC Disclaimer

The National Quality Measures Clearinghouseâ„¢ (NQMC) does not develop, produce, approve, or endorse the measures represented on this site.

All measures summarized by NQMC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public and private organizations, other government agencies, health care organizations or plans, individuals, and similar entities.

Measures represented on the NQMC Web site are submitted by measure developers, and are screened

solely to determine that they meet the NQMC Inclusion Criteria.

NQMC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or its reliability and/or validity of the quality measures and related materials represented on this site. Moreover, the views and opinions of developers or authors of measures represented on this site do not necessarily state or reflect those of NQMC, AHRQ, or its contractor, ECRI Institute, and inclusion or hosting of measures in NQMC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding measure content are directed to contact the measure developer.